Appendix D
DEQ RESPONSES TO WRITTEN PUBLIC COMMENT

DEQ Responses to Written Public Comment

COMMENT: The Executive Summary states the proposed TMDL is a "25% *nitrogen and phosphorus load reduction*.*"*This statement implies that this is a reduction from the existing total load, not simply a *25%* reduction in the "human-caused" component of the total load. At a Flathead Basin Commission meeting this past summer, DEQ stated that the *25%* reduction TMDL is based on just the human-caused portion of the loading and not the total existing load (which would include natural background as well). To be consistent with DEQ's earlier statements, we suggest that the TMDL be changed as follows: "A 25% *reduction in human caused loading of* ***nitrogen and phosphorus."*** If in Department misspoke at the meeting in Kalispell, we suggest that the TMDL document disclose what the actual reduction would be for the human-caused component as well.

> **DEQ RESPONSE**: The TMDL is expressed in Section 5.2.1 as follows: "*A 15 percent reduction in nitrogen and phosphorus loads (i.e., basin wide and from all anthropogenic sources as appropriate), plus a 10 percent load reduction for a margin of safety, is proposed as the TMDL. The TMDL applies to the entire basin and all anthropogenic sources, as appropriate*."

COMMENT: The last paragraph of Section 1.2 states: *"DEQ is currently in the process of developing statewide nutrient standards."* It is our understanding that these statewide standards already exist for protection of human health. Standards also exist in narrative form for protection of aquatic life in ARM 17.30.637. DEQ should clarify the intent of the statement in Section 1.2.

> **DEQ RESPONSE**: The sentence has been removed from the final draft.

COMMENT: The data fails to establish for the reader a clear and direct cause-effect relationship between increasing levels of nitrogen and phosphorus and algae. While these connections may exist, in fact, the text, and other cited references, repeatedly acknowledges great uncertainty in the critical areas needed to firmly establish this connection. More work is needed to support sweeping recommendations with such profound and far reaching impacts on local communities.

> **DEQ RESPONSE**: The observed water quality impairments in Flathead Lake are described in Section 2.1.2 and the conclusions reached are based on over 20 years of data collected by the Flathead Lake Biological Station. As shown in Figure 2-3, primary productivity (a commonly used lake water quality indicator) has increased since the 1970's. The pollution algae *Anabeana flos-aqua* has bloomed lake-wide during wet years when external nutrient loading is high and hypolimnetic oxygen depletion has been observed during stratification. All these factors point to declining water quality. Based on the available information, the cause of the decline is a combination of in-lake food web dynamics and external nutrient loading.

COMMENT: Page 2-7 "However, especially on wet years when external nutrient loading is high during summer, the pollution alga, *Anabaena fos-aquae,* has bloomed lake-wide." This fact could lead one to conclude that the loadings from the wastewater plants would have little impact on the production of pollution algae since those external loadings remain relatively constant on an annual basis.

> **DEQ RESPONSE**: The relative importance of all of the potential nutrient sources (point, nonpoint, airborne, natural) will be evaluated as described in the Phase II allocation plan (Section 5.3).

COMMENT: Page 3-1 The *"undesirable aquatic life"* that the department has the legal authority to prevent (identified by Dr. Stanford and included in the water quality targets for Flathead Lake) is *Anabaena fos-aquae.* Blooms of these nuisance algae have been associated with wet years with high external nutrient and localized shoreline pollution sources. This again should lead one to the conclusion that it is the departments'

obligation and duty to develop strategies that address this problem and not just exercise authority because the court demands it.

DEQ RESPONSES: The TMDL process is the mechanism currently available to the DEQ through which to develop such a strategy. In fact, the intent of the program, and this plan, is to develop strategies to restore water quality.

COMMENT: On page 4-3 it states that the Columbia Falls WWTP discharges to Turnbull Creek. This is incorrect. It discharges to the main stem of the Flathead River.

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: On page 4-1 of the document there is a statement: The population of the [Bigfork] area remained constant from 1990 to 2000. Big Fork *did* grow between 1990 and 2000.

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: Page 4-1 A flocculating not *fluctuating* clarifier is used for phosphorus reduction at the Whitefish sewage plant.

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: Page 4-3 Phosphorus levels are monitored weekly not monthly.

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: Little mention was given to clear reduction achieved by phosphate ban in detergents and reduction from improved sewage treatment plants. We have already made major improvements, not to say more shouldn't be done!

DEQ RESPNSE: The positive gains at reducing nutrient loads by improved sewage treatment is acknowledged (Figure 4-2) and appreciated. Point sources will be re-evaluated in context with all other sources (nonpoint, airborne, natural) as described in the Phase II allocation plan to ensure that the final load allocation developed in 2006 is equitable and addresses all source categories appropriately.

COMMENT: Figures 4-7 (Phosphorus Load by Source Category), 4-8 (Nitrate/Nitrite Load by Source Category) and 4-9 (Total Nitrogen Load by Source Category) are misleading in their present form because they do not quantify on a per acre basis the nutrient loads between managed and unmanaged forests. The narrative attempts to explain that because forests represent 80% of the land area they account for the greatest nutrient loading, which is understandable. However, from the graph it appears that the unmanaged forests are the greatest polluters to the watershed because there is no acreage loading calculation that shows how much phosphorus, nitrate/nitrite and nitrogen is being generated from managed forests vs. unmanaged forests on a per acre basis. There are substantial scientific studies that conclude unroaded forests provide the greatest protection for water quality, fisheries and wildlife that these graphs appear to contradict.

DEQ RESPNSE: The loading analysis by source category summarized in Figures 4-7 through 4-9 is but one piece of the puzzle that was available at the time this document was prepared. Insufficient data is currently available to clearly define the relative contribution from these two source categories. As described in the Phase II allocation plan (Section 5.3), all sources (including managed and unmanaged forest land) will be further evaluated to determine their relative importance in terms of nutrient delivery to Flathead Lake. Specifically, forested lands will be evaluated: 1) at a smaller scale (sub-watershed scale) in each of the TMDL studies to be completed within the Flathead Basin between

2002 and 2005; 2) through additional synoptic sampling in the Stillwater and Whitefish River Basins; and 3) through use of the proposed basin-scale watershed loading model.

COMMENT: There is also no narrative that explains that unmanaged forest's phosphorus, nitrate/nitrite and nitrogen contributions are a natural baseline "condition". This statement is made for airborne sources on page 4-13 but not for unmanaged forests.

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: Work by Makepeace and Mladenich, *1996* quantified the contribution of shoreline septic systems to the nutrient loading to Flathead Lake. This information was included in Table *4-2* along with a summary of other loading from other sources. This information attributes between *0.88%* and *1.62%* of the total nitrogen and phosphorus loads to Flathead Lake to point sources while attributing between *2.59%* and *3.86%* of those loads to shoreline septic systems. If you would take this information and look at the entire basin and the hundreds of miles of other lakeshores, rivers and streams with septic systems in close proximity, you could easily conclude that a very significant loading could be attributed to septic systems.

DEQ RESPNSE: As described in the Phase II allocation plan (Section 5.3), all sources (including the load from septic systems) will be further evaluated to determine their relative importance in terms of nutrient delivery to Flathead Lake. Specifically, septic system loads will be evaluated through the groundwater studies and through the use of the proposed basin-scale watershed loading model.

COMMENT: Page 4-7 Your adaptation and conclusions concerning the synoptic studies conducted on the storm water outfalls of the urban areas are baffling. In the text of the study I find statements like "*. . . **storm water runoff from the 4 major urban areas in the Flathead Basin would have accounted for only** 0.5% **and 0.9% of the total load of nitrate+nitrite nitrogen and phosphorus, respectively to Flathead Lake in 1995"*** and "*. . . **the nutrient load from urban storm water appears to be a minor load to Flathead Lake...".*** Contrary to the statements contained in the study, you conclude ***"a disproportionate share of the total phosphorus and nitrate/nitrite loads were produced in the most developed portions of the ... watersheds..."*** It appears that you are misinterpreting or misrepresenting the data analysis and providing your own conclusions to further your own agenda? You cannot base your assumptions on comparisons of unrelated data (base flow compared to storm event) to determine percentage of contribution. To do so you would have to assume that the storm event had no impact on the nutrient load from any other sources.

DEQ RESPONSE: The storm event nutrient loads captured during the synoptic study included runoff from all developed lands within their respective watersheds (see Table 4-4). A disproportionate share of the total load was delivered from the most developed portions of the studied watersheds. The nutrient load from the most developed portions of the studied watersheds certainly included urban stormwater loads, but urban stormwater comprises only one component of total load. The remainder was thought to be attributable to the predominance of developed lands within the lower portions of these watersheds (see Figure 4-4). As described in Section 5-3, additional synoptic sampling will be conducted to better define the relative nutrient contribution from all sources.

COMMENT: Page 4-12 Again your interpretation of the results of the synoptic storm water study, which I might add was based on only one storm event, is contrary to the data analysis provided by the scientists involved in the study. How can anyone looking at the study with an open mind come to the conclusion that you offer. Especially considering the fact that the synoptic study was limited to one storm event. You have demonstrated a serious bias by your misrepresentation of the study data.

DEQ RESPONSE: As described in Section 5-3, additional synoptic sampling will be conducted to better define the relative nutrient contribution from all sources.

COMMENT: Page 4-12 ***"What the loading analysis by source category may have failed to consider is the potential presence of natural nutrient sinks within the tributary watersheds that trap nutrients from the headwaters regions of the watershed well before they ever reach Flathead Lake."*** This statement should be continued to note that the natural nutrient sinks could definitely trap nutrients, but not indefinitely. The literature cites several conditions that can and do exist whereby the normally insoluble forms of nitrogen and phosphorus (those nutrients trapped in sediments) are released into the water column. This fact would alter you assumption that these nutrients remain trapped and never reach Flathead Lake. Your false assumptions should not be used to lend support to your theory that the lower portions of the watershed may be the most important in terms of nutrient delivery to Flathead Lake. You should stick to the conclusions of the scientific community that has studied the Flathead Basin and not interject your own half-baked assumptions into the plan.

> **DEQ RESPONSE**: As described in Section 5-3, additional synoptic sampling will be conducted to better define the relative nutrient contribution from all sources as well as to test the hypothesis that natural nutrient sinks exist within the tributary watersheds.

COMMENT: The Water Quality Targets remain on interesting discussion as well irregardless of the level of information on which they are based. Under Section 5.2.1 P 5-4 it calls for "reducing the current nutrient loads by approximately 16 % " to achieve target loads while the assumption used assumes a 27.27% reduction (110 - 80 = 30; 30 - 110 = 27.27 %), which incidentally does not include the "plus 10 % growth factor" mentioned for nitrogen and phosphorous loads, but most certainly also requires that consideration on the overall productivity figure.

> **DEQ RESPONSE**: The TMDL is expressed in Section 5.2.1 as follows: "*A 15 percent reduction in nitrogen and phosphorus loads (i.e., basin wide and from all anthropogenic sources as appropriate), plus a 10 percent load reduction for a margin of safety, is proposed as the TMDL. The TMDL applies to the entire basin and all anthropogenic sources, as appropriate.*"

COMMENT: Page 4-16 - 4-17 The plan documents the impact of biomass burning. ***"Biomass burning emits hundreds, if not thousands of chemicals into the atmosphere"*** and "This ***study concluded the transfer*** of ***plant nutrients in smoke from wildland burning to be statistically significant. Nutrients lost in smoke particulates from burned sites become nutrient additions in downwind locations.".*** How can you then state that ***"...sources of atmospheric nutrient*** *deposition... are not currently well understood*" What is understood and well documented in the literature is that biomass burning from open burning and wildland fires is a significant source of nutrients. It should be easy to conclude that a strategy to (1) reduce the risk of wildland fires, (2) limit controlled burning on private, state and federal forest lands, except to reduce risk of wildland fires, (3) limit or ban any open burning of biomass fuels including agricultural burns, (4) require use of only efficient residential wood stoves, could all lead to a significant reduction of nutrient loading in the basin. Since data collection began in 1977 on Flathead Lake most, if not all of the spikes in nutrient loading to the lake are directly attributable to wildland fire events here or in Idaho and Washington. What more evidence is needed to assume that burning of biomass is a source of nutrient load that can be mitigated, even on an interim basis?

> **DEQ RESPONSE**: The relative importance of all of the potential nutrient sources (point, nonpoint, airborne, natural) will be evaluated as described in the Phase II allocation plan (Section 5.3). All significant sources will then be evaluated in context with one another to develop the final allocation plan.

COMMENT: There was little mention of the combined effects of forest fires, controlled burns, dust from roads and farmers plowing fields.

> **DEQ RESPONSE**: The relative importance of all of the potential nutrient sources (point, nonpoint, airborne, natural) will be evaluated as described in the Phase II allocation plan (Section 5.3). All

significant sources will then be evaluated in context with one another to develop the final allocation plan.

COMMENT: The strength of the Plan lies in its two-phase structure. The short-term goal it sets for Phase 1, 25% reduction in nutrient loading from the core urban/agricultural area north of the lake and revised point source permit limits, will ensure that some of the most significant contributions to nutrient loading in the Lake will be curtailed in the near future. The adaptive management approach embodied in Phase Ii, which calls for continued monitoring of nutrient sources and adaptation of nutrient load allocations in response to the results of this monitoring, gives reasonable expectation of also reaching the long-term goal set by the Plan: 25% load reduction overall.

DEQ RESPONSE: The two-phased approach remains intact in this final document. However, the evaluation of point source limits has been moved into Phase II such that this source is considered in context with all other potentially significant sources when the final allocation is developed.

COMMENT: On page 5-3 remove "but were not accepted by the Flathead Basin Commission."

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: Goals can easily be set oblivious to other influences, but when other influences are taken into account those same goals can be found to be inappropriate. To suggest goals without a discussion in how they will be obtained or what programs can or should be implemented, and a potential cost/affect to the taxpayers is not in the public interest. Any restorative strategy must include the "how to accomplish" not simply a "need to accomplish" based on incomplete data.

DEQ RESPNSE: As required by both the Clean Water Act and the Montana Water Quality Act, this plan establishes measurable water quality goals (i.e., water quality restoration targets in Section 5.1), and a means to achieve these goals (i.e., the TMDL presented in Section 5.2). Both the water quality restoration targets and TMDL are based on over 20 years of data collected by the Flathead Lake Biological Station and were established by the FBC's TMDL Technical Advisory Committee. The "how to accomplish" is articulated in the two-phased allocation plan (Section 5.3), the monitoring and adaptive management strategy (Section 6.0), and the restoration strategy (Section 7.0).

COMMENT: By far and away the largest percentage of land mass providing a natural base for nutrient loading is left out of the discussion of target goals. This has as its consequence the elimination of all federal and state lands producing nutrient load being eliminated. It is grossly negligent to eliminate 85% of the public lands in Flathead County from any goal discussion in this regard. This also has as a consequence the ability of the federal government and the State of Montana having not to follow any discourse or assume any liability for nutrient loading in Flathead Lake. This is patently wrong.

DEQ RESPONSE: No sources are being eliminated from consideration. The relative importance of all of the potential nutrient sources (point, nonpoint, airborne, natural) will be evaluated as described in the Phase II allocation plan (Section 5.3). All significant sources will then be evaluated in context with one another to develop the final allocation plan.

COMMENT: There seems to be some confusion with the TMDL target that states there shall be "No declining trend in oxygen levels in the hypolimnion." In reading Appendix B, it appears that Biostation researchers are interpreting this target as being based on evaluation of individual DO profiles rather than a comparison of hypolimnetic DO levels recorded over time (i.e., over a period of years). It is our belief that this target is only meaningful when compared over a period of years. For example, at a given site in Flathead Lake, annual minimum hypolimnetic DO concentrations would be plotted over time and this would be the basis for the trend determination.

DEQ RESPNSE: The final document has been revised to reflect this comment.

COMMENT: Related to [the above] Comment, we believe the Department should compile the historic data on dissolved oxygen levels in the lake, at both the Midlake Deep site and in Big Arm Bay prior to finalization of the TMDL. While the draft document states that oxygen levels have been declining over time, we have not seen data presented in a way that supports these statements. Compiling these historic data will also be essential for future "trend determinations" to evaluate attainment of the targets.

DEQ RESPNSE: Dissolved oxygen trend data will be evaluated in five years at which point in time the DEQ will be required to evaluate the success of this plan.

MULTIPLE SIMILAR COMMENTS REGARDING POINT SOURCE LIMITS: Multiple comments were received suggesting that it was inappropriate to include revised point source limits in the Phase I allocation plan.

DEQ RESPONSE: Revised point source limits have been removed from the Phase I allocation plan. The relative importance of all of the potential nutrient sources (point, nonpoint, airborne, natural) will be evaluated as described in the Phase II allocation plan (Section 5.3). All significant sources will then be evaluated in context with one another to develop the final allocation plan.

COMMENT: The section Forested Land on pages 5-8 through 5-10 appears to rely on Best Management Practices to protect water quality. We believe there needs to be a quantitative measurement of BMPs that actually measures Nitrogen and Phosphorus to evaluate their true effectiveness. To our knowledge, BMPs have been evaluated for their application in the audit reports not their effectiveness in limiting nutrient loading. As an example, a project in the Swan Valley called the Hemlock Access Project would allow Plum Creek to build 8 miles of road in one steep square mile section with 18 stream crossings. This road construction is expected to increase sediment by 1,000% in Windfall Creek with the application of "enhanced" BMPs. This road construction is also expected to eliminate any cutthroat trout population in the stream. Obviously the application of BMPs in this case does not protect the beneficial uses of this stream.

DEQ RESPONSE: As described in the Phase II allocation plan (Section 5.3), all sources (including managed and unmanaged forest land) will be further evaluated to determine their relative importance in terms of nutrient delivery to Flathead Lake. Specifically, forested lands will be evaluated: 1) at a smaller scale (sub-watershed scale) in each of the TMDL studies to be completed within the Flathead Basin between 2002 and 2005; 2) through additional synoptic sampling in the Stillwater and Whitefish River Basins; and 3) through use of the proposed basin-scale watershed loading model.

COMMENT: We fully support the additional monitoring proposed on page 6-2 but would like to see the funds allocated to make sure this monitoring is done. The Master Monitoring Plan for the Flathead Basin has never been fully implemented due to funding constraints and we are concerned that without an allocation of funds to actually conduct this monitoring it will also languish. Monitoring these additional sites is critical to fully implementing the TMDL so funding sources should be identified.

DEQ RESPONSE: Much of the additional monitoring and assessment work recommended in this plan is already funded and ongoing, or funding sources have been identified (see Section 5.3.2).

COMMENT: We have concerns about monitoring of the TMDL target that states there shall be "No measurable blooms of *Anabaena fos-aquae* or other pollution algae." It is unclear to us how this TMDL target will be "measured" based on our review of the document and the monitoring report in Appendix B. *Anabaena fos-agttae* have been noted as a component of the Flathead Lake algal biomass dating back to the early 1900's (see review in Stanford et al. 1997). The final document should clarify how this target will be measured for compliance determination.

DEQ RESPONSE: The target "No measurable blooms of *Anabaena fos-aquae* or other pollution algae" is but one of a suite of targets that will be evaluated collectively in an effort to observe long-term water quality trends in Flathead Lake.

COMMENT: We are pleased to see that the draft TMDL recognizes the significant progress made by the timber industry in implementing forestry Best Management Practices (BMPs) over the past decade. Audits conducted biannually by the Montana DNRC since 1990 clearly demonstrate that logging activities conducted in compliance with modern forestry BMPs (including retention of Streamside Management Zones) have a negligible effect on water quality. Additionally, when old roads constructed prior to the advent of BMPs are re-used, forest landowners commonly upgrade these roads to meet current standards, thereby resulting in net improvements to water quality. As Plum Creek implements it's Native Fish Habitat Conservation Plan (NFHCP), these sorts of road improvements will continue until all old roads are either upgraded or reclaimed. While the draft TMDL did not propose a specific allocation for forestry activities at this time, Plum Creek is committed to conducting our activities in ways that minimize impacts on water quality. To the extent that historic forestry activities are contributing to current water quality degradation in the basin, we support the Departments decision that they are better addressed during restoration planning for headwater basins (e.g., Swan, North Fork Flathead, etc.). This will allow for a much more appropriate scale of analysis.

DEQ RESPONSE: Acknowledged.

COMMENT: Page 5-11 At the time of the synoptic studies of storm water outfalls the City of Whitefish had already begun a program of BMP's to deal with nonpoint sources of runoff. Within our City limits we have 25 specific drainage basins with storm water collection systems. Of those, 19 are now equipped with properly designed treatment facilities. Of the six uncontrolled discharge points two belong to the MDOT. Of the four remaining outfalls only one has a drainage area that exceeds 9,000 square feet. Once again we can demonstrate that we as stakeholders have stepped up to the plate and made significant improvements to help mitigate nutrient loadings. I'm confident that the other municipalities have similar efforts to report. The information contained in the synoptic studies and your assumptions based on that data does not take into consideration improvements installed since that time. All of the outfalls studied in Whitefish in 1995 and 1996 have been upgraded to include combination wet detention basin and infiltration basin treatment technologies.

DEQ RESPONSE: Acknowledged.

COMMENT: If you truly want to make a positive impact on the quality of Flathead Lake, impose an interim moratorium on septic systems within one thousand feet of any body of water or watercourse. You could then refine the limits on location and design of the systems to a point that they would not significantly increase the nutrient load to the basin. Limitation of septic system installation could easily be implemented on an interim basis and achieve significant results.

DEQ RESPONSE: As described in the Phase II allocation plan (Section 5.3), all sources (including the load from septic systems) will be further evaluated to determine their relative importance in terms of nutrient delivery to Flathead Lake. Specifically, septic system loads will be evaluated through the groundwater studies and through the use of the proposed basin-scale watershed loading model.

COMMENT: The short comment period leaves us unable to prepare a thorough and complete set of comments and as a result we request that the comment period be extended to allow for a more comprehensive review.

DEQ RESPONSE: The public involvement process is described in Section 8.0 of this document. There are no state regulatory or statutory requirements for public comment regarding TMDL documents. In addition to the 30 day public comment period, several meetings were held to provide

the public with opportunity to discuss the document, including: two public informational meetings hosted by the DEQ and FBC; two FBC meetings (both open to the public); and a meeting with the wastewater treatment plant operators to discuss point source limits. Further, although the official public comment period was only 30 days, most of the technical elements of this document were developed over a period of several years in concert with the FBC and their TMDL Technical Advisory Committee. The targets and TMDL were originally adopted by the FBC in 1998. The FBC includes representatives from a variety of stakeholder/interest groups including the forest industry, agriculture, environmental concerns, and local, state, tribal and federal land management agencies. Given that the development of the document included a process involving a broad array of stakeholder representatives and the fact that the 30 public comment period solicited numerous comments covering virtually every chapter of the document, it is felt that an adequate level of public involvement was achieved.